

Work Order ID 80911***80911***

Page 1

March-05-12 10:38:22 AM

Item ID: D105-674-011G

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Skidtube, Grey

Start Date: 05/03/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 19/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: *MLJ*Date: *12/03/05* Tooling:

Date:

Run Start ***NR1***

QC:

Date: SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D2966

Rev A2

100

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile & type labels per PPP D105-674-011G CHG002

*JB**1*
for MLJ 12-5-23
12-05-23

130

0.00

130

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

** Pull D2966-1bent **

- 1-Cut Aft end at 107.06" using DT8185D
- 2-Deburr ends
- 3-Drill Aft Cap holes using DT8678
- 4-Locate DT8679 with 1/8 clecos in Aft Cap holes. Ensure DT8679 is centered on Fwd end of tube and drill #40 Fwd bushing.
- 5-Clamp DT8679 to the tube. Drill all #30 wearplate and crossbolt holes.
- 6-Open Aft Cap holes using #6 drill
- 7-Open wearplate holes and two side holes to Ø19/64" (0.297") as per Dwg D2966-1.
- 8-Deburr holes.
- 9-Open remaining (16) crossbolt holes to Ø0.500

MLJ 12-4-12
12/04/12
DP 12-5-4
BE 12-05-09

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

0.00

140

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

1-Weld Fwd Cap as per Dwg D2966 and QSI 004. Fill #40 Fwd cleco hole.
2-Grind Fwd Cap welds flush

A/R M120164
30E 12/05/09

150

QC10- Inspect visual per QSI004- ground welds

0.00

150

QC

Memo

0.00

Quality Control

8/2/05/09

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

8/2/05/09

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SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

170 Chemical Conversion Coat per QSI005 4.1

0.00

170

HandFinish

Memo

0.00

Hand Finishing

N/A 12-5-10

180 QC- Inspect Part Finish

0.00

180

QC

Memo

0.00

Quality Control

① SAA 12-05-11

190 Skidtubes

0.00

190

Skidtubes

Memo

0.00

Skidtubes

1-Open crossbolt holes to finish size as per Dwg D2966
2-Open 14 holes to Ø0.750" & 2 holes to Ø0.875", countersink crossbolt holes & remove alodine to prepare for welding as per Dwg D2966
3-Deburr holes inside & outside, blow out chips

① SAA 12-05-11

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Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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200

0.00

200

Skidtubes

0.00

Skidtubes

Memo

1-Bond Web in place per QSI 015. (Ensure holes line up)

Pick:

A/R Sikaflex-291 batch: m121221Sikaflex expiry date: 2013-01-04start time: 11:55end time: 12-05-14 2:30

2-Weld Crossbolt Spacers as per Dwg D2966 and QSI 004. For crossbolt spacer, weld one side, pass 5/8" drill; weld other side, pass 5/8" drill.

Pick:

A/R Aluminum Rod batch: m120164

3-Pass Ø0.630" drill to remove spillover for D2973 crossbolt. Pass Ø0.750" drill to remove spillover for D2971 crossbolt.

4-Grind welds flush as per Dwg D2966

210

QC10- Inspect visual per QSI004- ground welds

0.00

210

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
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1

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Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

220 QC5- Inspect part completeness to step on W/O

0.00

220

QC Memo

0.00

Quality Control

225 Chemical Conversion Coat per QSI005 4.1

0.00

225

HandFinish Memo

0.00

Hand Finishing

230 Grey Sandtex(Ref:4.3.5.6) per QSI005 4.3

0.00

230

Powdercoat Memo

0.00

Powder Coating

START TIME: 11:00
OVEN TEMPERATURE: 320 OF
FINISH TIME: 11:30

W 7338

1 116 125-16

1X 12/05/16

W/O:		WORK ORDER CHANGES					
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NS1

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1

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Required Date: 19/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

240

QC3- Inspect Part Finish

0.00

240

QC

Memo

0.00

Quality Control

1 *cl* *BR 12-5-16*

250

HandFinishing

0.00

250

HandFinish

Memo

0.00

Hand Finishing

1-Inspect for foreign objects as per QSI 024

2-Install Inserts, Wearplate and Cap per Dwg D2966. Insert a drop of sikaflex at insert holes before installing wearplates. Seal Aft Cap using Sikaflex. Install bushing and nut. By looking Fwd, install nut to right hand side.

Pick:

QtyPart NumberDescriptionBatch

A/RSikaflex-291 *121531*Sikaflex expiry date: *12/07*

3-Wing Walk as per Dwg D2966 and QSI 005 4.4

Batch: *121505*1 *Q* *20* *12/05/17*

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1

Cust Item ID:

Required Date: 19/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

260 QC3- Inspect Part Finish 0.00

0.00

*8/26/12****260***

QC

Memo

0.00

Quality Control

270 QC5- Inspect part completeness to step on W/O 0.00

0.00

*8/26/12****270***

QC

Memo

0.00

Quality Control

*****ENSURE INSERT ARE AT LOCATION (6) AS PER DWG
D2966*****

280 Pick Kit 0.00

0.00

280

Packaging

Memo

0.00

Packaging

i

12/05/12 JB

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 05/03/2012 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 19/03/2012 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Run Start *NR1*

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

Stop ***NR2***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

290 QC4- 100% Inspect kits for completeness

0.00

290

QC

Memo

0.00

Quality Control

300

0.00

300

Packaging

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D105-674-011G
Location:

310

QC21- Final Inspection - Work Order Release

0.00

310

OC

Memo

0.00

Quality Control

12/5/29 JJ
mf
12-05-28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Picklist Print

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Parent Item: D105-674-011G

D105-674-011G

Parent Item Name: Skidtube, Grey

Start Date: 05/03/2012

Required Date: 19/03/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A04.07.07New IssueKJ/JLM
seq110 DD verf:EC

IPP Rev:B 10.06.09 remove

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D2966-1-BENT

Manufactured

No

130

Each

2.0000

1

1

D2966-1-BENT

**

Skidtube Assembly 105

Location

Loc Qty

Loc Code

LG

2

77327

1

77444

1

D2964

Manufactured

No

140

Each

29.0000

1

1

D2964

**

Cap

Location

Loc Qty

Loc Code

LG002

29

74719

29

D2976

Manufactured

No

200

Each

0.0000

1

1

D2976

**

BO 105 Skidtube I Beam

D2971

Manufactured

No

200

Each

34.0000

1

1

D2971

**

Cross Bolt Spacer

Location

Loc Qty

Loc Code

LG001

34

74720

34

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Skidtube, Grey

Start Date: 05/03/2012

Required Date: 19/03/2012

Start Qty: 1.00

Required Qty: 1.00

D2973 Manufactured No

200 Each

58.0000

7 7

D2973

Cross Bolt Spacer

**

BEA/05/14

Location

Loc Qty

Loc Code

LG002

58

14636

58

7

D2965 Manufactured No

250 Each

22.0000

1 1

D2965

Cap, 105 Skidtube

**

1 (2P) 12/05/16

Location

Loc Qty

Loc Code

FP002

22

71371

22

D2970-1 Manufactured No

250 Each

7.0000

1 1

D2970-1

Wearplate

**

(SP) 12/05/16

Location

Loc Qty

Loc Code

FP001

7

48213 ✓

7

D2970-3 Manufactured No

250 Each

5.0000

1 1

D2970-3

Wearplate

**

1 (SP) 12/05/16

Location

Loc Qty

Loc Code

FP001

5

48214 ✓

5

D3176-1 Manufactured No

250 Each

10.0000

1 1

D3176-1

Bushing

**

1 (SP) 12/05/16

Location

Loc Qty

Loc Code

ST032

10

37586 ✓

10

W/O:		WORK ORDER CHANGES					
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Required Date: 19/03/2012

Start Qty: 1.00

Required Qty: 1.00

D3176-3

Manufactured No

250

Each

13.0000

1

1

D3176-3

Nut

**

1

(SP)

12/05/16

Location

Loc Qty

Loc Code

ST032

13

44896 ✓

13

ALS7-1032-130

Purchased

No

250

Each

2,400.000

36

36

AI S7-1032-130

Insert

**

36

(SP)

12/05/16

Location

Loc Qty

Loc Code

ST280

327

121259 ✓

117717

27

118966

22

119775

278

ST282

2073

119530

73

120181

2000

MS27039-1-08

Purchased

No

250

Each

1,255.000

26

26

MS27039-1-08

Screw

**

26

(SP)

12/05/16

Location

Loc Qty

Loc Code

ST291

1255

12104 ✓

117423

81

119075

168

119109

6

120308

1000

AN960JD10L

✓ NAS1149D0332J

Purchased

No

250

Each

0.0000

28

28

*AN960JD10L *

Washer

**

28

(SP)

12/05/16

120644

11

121011

17

March-05-12 10:38:26 AM

Shop Packet Print

Page 3

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Start Date: 05/03/2012

Required Date: 19/03/2012

Start Qty: 1.00

Required Qty: 1.00

MS27039-1-09

Purchased

No

250

Each

355.0000

2

2

MS27039-1-09

Screw

**

2

OP

12/05/16

Location

Loc Qty

Loc Code

FP002

101

18057 ✓

101

ST291

254

111650

254

D2972

Manufactured

No

290

Each

51.0000

6

6

D2972

Bushing

**

JB

Location

Loc Qty

Loc Code

ST022

51

33544

20

44160

31

4x 33244
2x 44160

D2974

Manufactured

No

290

Each

41.0000

1

1

D2974

Packer

**

JB

Location

Loc Qty

Loc Code

ST022

41

71997

41

71997

D2975

Manufactured

No

290

Each

6.0000

2

2

D2975

Wearshoe

**

80093 JB

12/05/23

Location

Loc Qty

Loc Code

ST497A

6

74721

6

March-05-12 10:38:26 AM

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Start Date: 05/03/2012

Required Date: 19/03/2012

Start Qty: 1.00

Required Qty: 1.00

AN4-51A Purchased No
AN4-51A
Bolt

290 Each 188.0000 3 3 ✓
** 120986 JB

Location	Loc Qty	Loc Code
ST361	188	
119798	30	
120187	158	

AN960JD10L NAS1149D0332J Purchased No
AN960.ID10I
Washer

290 Each 0.0000 8 8 ✓
** 121011 JB

MS21042L4 Purchased No
MS21042I 4
Nut

290 Each 4,370.000 3 3 ✓
** 121011 JB

Location	Loc Qty	Loc Code
ST300	4370	
117441	51	
117601	157	
118451	133	
119017	200	
119075	3829	

MS27039-1-08 Purchased No
MS27039-1-08
Screw

290 Each 1,255.000 8 8 ✓
** 12105723 JB

Location	Loc Qty	Loc Code
ST291	1255	
117423	81	
119075	168	
119109	6	
120308	1000	

120308

March-05-12 10:38:26 AM

Shop Packet Print

Page 5

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN RF	DRAWN BY RF	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED #	APPROVED #	DRAWING NO. D2966	REV. A SHEET 1 OF 2
DATE 00.03.08		TITLE BO 105 SKIDTUBE ASSEMBLY	SCALE NTS
A	00.03.08	NEW ISSUE	

RELEASED
00.05.11 #

Qty	Part Number	Description
X	D2966-041	SKIDTUBE ASSEMBLY
1	D2962-125	EXTRUSION
1	D2964	CAP
1	D2965	CAP
1	D2970-1	WEARPLATE
1	D2970-3	WEARPLATE
1	D2971	CROSS BOLT SPACER
7	D2973	CROSS BOLT SPACER
1	D2976	WEB
36	ALS7-1032-130 or ALS4-1032-130 or AKS7-1032-130 or AKS4-1032-130	INSERT
28	AN960JD10L	WASHER
26	MS27039-1-08	SCREW
2	MS27039-1-09	SCREW
1	D3176-1	BUSHING
1	D3176-3	NUT



GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) WELDING TO BE DONE PER DART QSI 004.
- 3) INSERT D2976 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015 AFTER BENDING.
- 4) USE DART DRILL TEMPLATE DT8451 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION B-B (34 PLACES) AFTER FINISH. SEAL WEARPLATE SCREWS WITH SIKAFLEX-241/-291.
- 5) DO NOT INSTALL MS27039-1-08 SCREWS AND AN960JD10L WASHERS IN THESE LOCATIONS.
- 6) INSTALL ALS7-1032-130 INSERT, MS27039-1-08 SCREW, AND AN960JD10L WASHER IN 2 PLACES THIS LOCATION BEFORE POWDER COATING.
- 7) FINISH:
ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2976 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 1.00 ABOVE CENTER LINE PER DART QSI 005 4.4 (OPTIONAL) BLACK SANDTEX (REF 4.3.5.7)

01.01.24
CP 01.01.30



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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 80911 MCB
12/03/05

A2	02.10.30	ADD D3176-1/-3	# CP
A1	01.01.24	CHANGE COLOR TO BLACK SANDTEX	# CP

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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

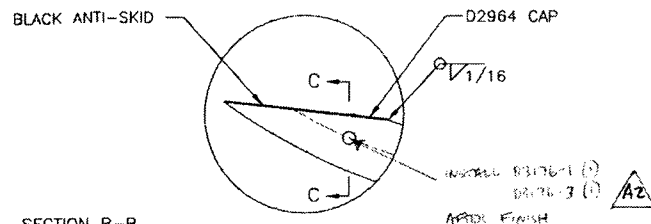
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

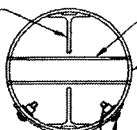
80911

DETAIL A
SCALE 1:3



SECTION B-B
SCALE 1:6

D2976 WEB (REF) D2973 SPACER



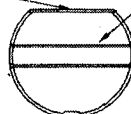
ALS7-1032-130 INSERT (34 PLACES)

MS27039-1-08 SCREW (1)
AN960JD10L WASHER (1)
(26 PLACES)

AFTER BENDING AND DRILLING ASSEMBLY
PERFORM THE FOLLOWING FOR $\phi 0.750$ HOLES ONLY:
1. CHAMFER HOLE $0.030 \times 45^\circ$
2. INSERT D2973 SPACER (7 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. PASS $\phi 0.630$ DRILL TO REMOVE SPILL OVER

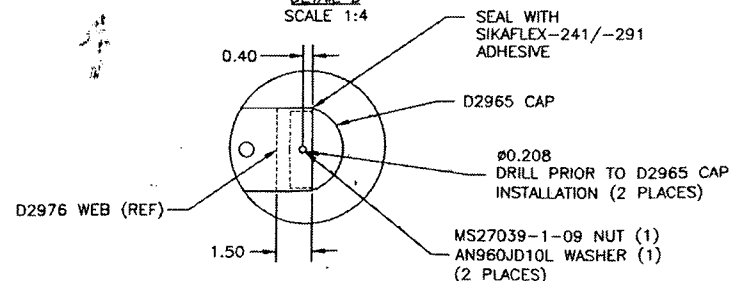
SECTION C-C
SCALE 1:6

D2964 CAP (REF) D2971 SPACER

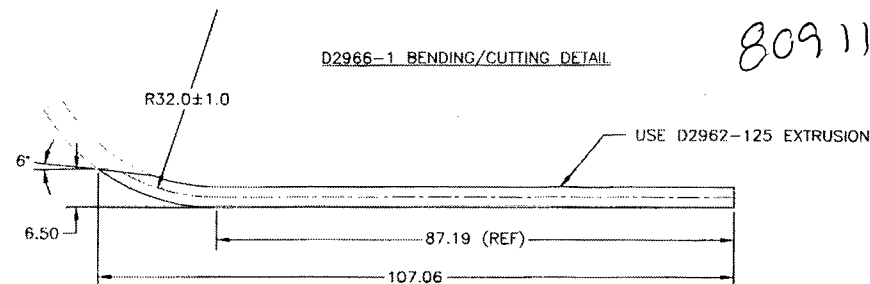


PERFORM THE FOLLOWING FOR $\phi 0.625$ HOLES ONLY:
5. CHAMFER HOLE $0.030 \times 45^\circ$
6. INSERT D2971 SPACER
7. WELD INTO PLACE AND GRIND FLUSH
8. PASS $\phi 0.750$ DRILL TO REMOVE SPILL OVER

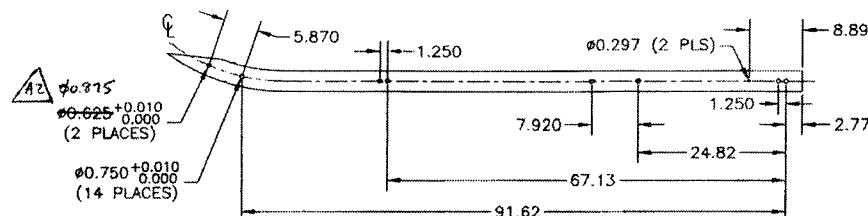
DETAIL D
SCALE 1:4



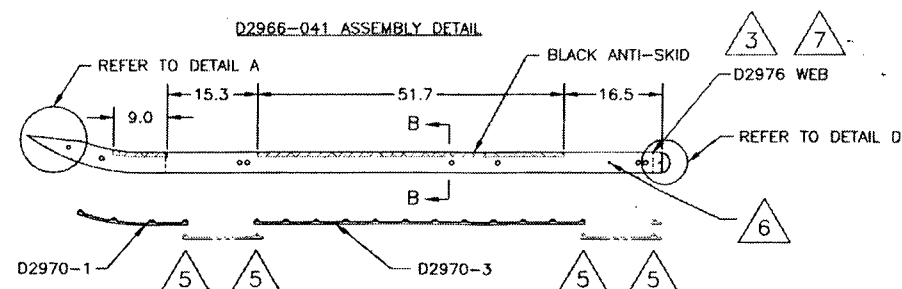
D2966-1 BENDING/CUTTING DETAIL



D2966-1 DRILLING DETAIL



D2966-041 ASSEMBLY DETAIL



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DATE 00.03.08		TITLE BO 105 SKIDTUBE ASSEMBLY			SCALE 1:20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 259

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: B68574
Part number: D105-674-0110
Description: ICS
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Sal Lewis Date of Test Coupon 11-06-30
Welder Barclay Elliott Date of Test Coupon 11-06-30

The above named individual is qualified in accordance with AWS D17.1.2001 to weld